A Prevention Model for the Failure of Hospital Information Systems in Malaysian Government Hospitals

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***Abstract*—Various versions of Hospital Information system (HIS) have been developed and implemented in Malaysian government hospitals as an enabler in providing a better service to public. However, some of the applications are suffering and facing many challenges during implementation phase and failed to be implemented successfully. Preliminary study revealed that there is no guideline in implementing IS in government hospitals in Northern Region of Malaysia. This article proposes a guideline to prevent the mentioned problems in ensuring a success implementation of IS in Malaysian government hospitals. Extensive literature review and in-depth interview have been conducted to identify the Critical Failure Factors (CFFs) of IS projects implementation. Key persons representing top management, IT practitioners and medical practitioners from four selected government hospitals in the Northern Region of Malaysia were involved in data collection. The model has been constructed to tackle the identified CFFs by incorporating the elements of CM adopted from the three CM models (Lewin's, Kotter's, and Prosci's ADKAR models). The model is believed to be beneficial for top management, IT practitioners and medical practitioners in preventing IS implementation failure among government hospitals towards ensuring the success implementation.**

***Index Terms*—Hospital Information Systems; Implementation Failure; Prevention Model; Change Management; Critical Failure Factors.**

I. INTRODUCTION

Hospital Information System (HIS) has become an important tool needed to manage information in hospital efficiently. HIS can be defined as a computer-based information system designed to be used in healthcare environment [1]. HIS not only helps to manage hospital's medical information related to patient care, but also support the administrative and financial information such as payment [2] and [3]. Some of the components in HIS are Patient Management, Pharmacy Information System, Laboratory Information System, Radiology Information System, Financial Information System, Inventory Information System and others [4].

Government hospital is one of the healthcare organizations which provide healthcare service to the public. According to Abouzahra [5], healthcare sector is different from other sector because of its environment and the diversity of the systems and devices used. Healthcare is a critical and complex sector [6]. It comprises of many disciplines of services such as surgical, obstetrics & gynaecology, paediatric, radiology, psychiatric, medical laboratory, emergency & trauma and a lot more.

Marchal and the team [7] also defined healthcare organizations in the same way; consists of different units and layers which deal with different task and specialized functions to provide services to the patients and community. It also involves of large number of professionals' positions such as consultants, specialists, doctors and paramedics, which makes it structurally complex [8].

The failure of IS projects implementation is not a new phenomenon, it has been a global issue. Previous researchers have pointed out a lot of factors that influenced the success/failure of IS projects implementation. Resistance to change is one of the common issues during the implementation of a new system [6], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18]. Many factors contributing to the resistance has been discussed by previous researchers. Most of the factors are related to human, technology, hardware and infrastructure issues.

Although HIS projects have been developed according to stakeholders' requirements within a specific scope, budget and time, it never guaranteed that the system will be implemented successfully due to many reasons. There are two categories of failure, namely total failure and partial failure [17]. In IS project's implementation, the project implementation is categorized as total failure when the developed system has been implemented, but immediately after that it has been abandoned.

Partial failure may happen in IS project implementation in several situations. The first situation is where the project is facing with the sustainability issue where the project is successfully implemented at the early stage, however after a year and so, the project failed. The second situation is where the project has been implemented, but not all functions or features have been used by users. The third situation is where the system is utilized by only several designated users or departments or units while others just ignored it.

Based on the issues discussed, a prevention model which able to manage human-side of change is needed to prevent the failure of IS projects implementation in Malaysian government hospitals.

Based on the mentioned issue, this article proposes a prevention model that incorporated Change Management (CM) towards ensuring successful implementation of HIS projects in Malaysian government hospitals. This article is organized as follows; the following section discusses the existing implementation of HIS in Malaysian Government hospitals, followed by discussion on Change Management. Findings are discussed in Section IV on factors contributing to the failure of HIS implementation, while the proposed

model is presented and discussed in Section V. Finally, the conclusion section presents discussions on future works of the study.

II. HIS Implementation in Government Hospitals

In Malaysia, there are two categories of hospitals under Ministry of Health; IT hospital, and non-IT hospital. This study has selected four hospitals in the Northern region of Malaysian. Out of four, only Hospital Sultanah Bahiyah is categorized under IT hospital while others were non-IT hospital. Each hospital implemented various versions of HIS either developed by vendors or hospital's IT Department.

HIS is the main IS used in hospitals to manage patients record. Each hospital implemented different version of HIS. Hospital Pulau Pinang (HPP) is implementing Sistem Pengurusan Pesakit Dalam (SPPD) since 1990s, while in Hospital Sultanah Bahiyah (HSB) is using Total Hospital Information System (THIS) since 2007. In Hospital Tuanku Fauziah (HTF) Tele-Primary Care (TPC) was implemented since 2008. All systems were developed by different vendors appointed by Ministry of Health (MOH) Malaysia. In Hospital Kulim (HKulim), Electronic Health Information System (e-HIS) was used since 2004. The IS was developed by a vendor appointed by the hospital. However, there were some similar and dissimilar characteristics between the four HIS.

In-depth interview conducted with the key persons from four selected hospitals in the Northern Region of Malaysia revealed that the implementation of HIS in three of the hospitals can be categorized as partial failure because the HIS are still in use until now, although it is not fully utilized. For example, although Sistem Pengurusan Pesakit Dalam (SPPD) in Hospital Pulau Pinang (HPP) has been implemented since 1990s, it was found that the system has been used only by certain wards, not all wards were using the system. Moreover, the Diet Order module has been abandoned.

Total Hospital Information System (THIS) in Hospital Sultanah Bahiyah (HSB) covers broader scope because it is not only managing patient records, but it is integrated with Laboratory Information System (LIS) and other systems used by their Radiology Department. Its scope covers all disciplines in the hospital. It holds a smooth implementation since it was introduced in 2007. Minor issues arose successfully tackled with the active involvement of top management and Head of Departments.

In Hospital Tuanku Fauziah, the implementation of Tele-Primary Care is very suffering. The scope of the system is complete, except that it is not integrated with other important system in the hospitals such as LIS and financial system. Since its implementation in 2008 until now, the system has been utilized by only a small group of users. During the early years of implementation, the system is used by ENT (Ear, Nose & Throat) Specialist Clinic, Medical Department, Radiology Department and some wards. Other departments such as Obstetrics & Gynaecology, Orthopaedic and Surgical Department are not using it. Since early 2016, ENT Specialist Clinic no more using the system.

Hospital Kulim seems to share the same problem as the other hospitals. The implementation of its Hospital Information System (e-HIS) is not successful. The system covers both in-patient and out-patient records. The system is used at every Specialist Clinic in the hospital including the Emergency Department to register patients. If the doctor ordered the patient to be warded, the clerk at the Admission Counter will update the patient's record as in-patient. Doctors are responsible to enter patient's treatment information accordingly. At the Revenue Collection Counter, e-HIS is used to collect Hospital Bill payment. However, this system is not integrated with other systems in the hospital.

III. Change Management

Change Management (CM) is an approach used to manage human-side of change. *"Change management is about engaging and preparing people"* [19]. CM is one of the components in project management [15], [20]. CM is defined as a set of basic tools or structures, used to control change efforts [21]. It comprises of process, tools and techniques used in managing change at people-side to achieve business objective. CM helps towards successful individual transition by consolidating the organizational tools which will provide a positive implication towards the change.

CM concept has been applied in various industries either in public or private sector. Many organizations proved that CM helped to improve their efficiency. One of the cases highlighted by Faucheux [22] was California State University which comprises of 23 satellite campuses. A change in IT system at the main campus will affect all other satellite campuses with thousands of staffs and students. However, with proper change management strategy they manage to cope with the change which involves a large crowd of people.

In IS project implementation, Ziemba & Oblak [23] have conducted a case study on two IS projects implementation in Polish public organizations. Those two projects are similar in scope and size. However, one project has been implemented without CM, while CM has been conducted in the implementation of another project. As a result, the project in which CM has been introduced shown a successful implementation where the system has been fully used by the users, while the project implemented without CM only partially success as it has not been fully used by the users and the implementation period need to be extended.

In healthcare sector, various CM practices have been used to implement clinical information system. Leyland and the team [24] have recommended CM to be integrated into Clinical Health Information Technology project to elevate the adoption among the users. A combination of McKinsey 7S framework, Kotter CM Model, William Bridges CM Model and Prosci's ADKAR Model have been adopted for the implementation. In Electronic Medical Record (EMR) implementation, Neumeier has adopted Kotter's CM practice to address human issues of the implementation, thus allowing efficient access to patient information [19]. For Electronic Medication Management System in a Nursing Home, Varghese chose HSE Change Model to promote the adoption of the system among the medical practitioners in the Nursing home [25].

Although different approaches of Change Management were employed in IS implementation, but they shared the same goal; to manage human-side of change to ensure the success of IS implementation. Hence, CM has been selected as a solution in this article. Three main CM models chosen

are Lewin's, Kotter's, and Prosci's ADKAR Change Management Models.

IV. CRITICAL FAILURE FACTORS

Extensive literature review and in-depth interview have been conducted to identify the Critical Failure Factors (CFFs) of HIS projects implementation. Key persons representing top management, IT practitioners and medical practitioners from four selected government hospitals in the Northern Region of Malaysia were involved in data collection as depicted in Table 1.

Table 1
Respondents' profile

Respondent	Hospital	Respondent's position	Work experience in hospital (Years)
R1	HTF	Hospital Deputy Director	>15
R2	HTF	IT Officer	7
R3	HTF	Senior Medical Officer	8
R4	HTF	Radiologist	8
R5	HPP	Head of IT Department	4
R6	HPP	IT Officer	4
R7	HPP	Nurse	6
R8	HSB	Head of IT Department	8
R9	HKulim	Head of Pharmacy Department	6
R10	HKulim	Assistant IT Officer	5
R11	HKulim	Head of Nursing Unit	5

Interpretive analysis was used to analyze the recorded interview data in which the recorded interview was transcribed. The raw data were systematically analyzed and the identified CFFs were categorized into meaningful categories using open coding [26]. The study has identified thirty-six CFFs of HIS projects implementation which have been categorized into for main categories as shown in Table 2 and Table 3.

Table 2
CFFs of HIS implementation; human and software limitation factors

Human	Software limitations
Workload	System's complexity
Readiness	Compatibility
Priority	Wrong workflow
Skill	Suitability
Mentality	System integration
Preference	Redundancy
Attitude	System ownership
Impression	Data sharing
Initiative	Efficiency
Understanding	Reliability
Commitment	System's limitation (e.g. not editable)
Awareness	No replication
Self-interest	
User dependency	

Table 3
CFFs of HIS implementation; technology and support factors

Technology	Support
Compatibility	Financial
Readiness	Technical
Availability	Peer influence
Network stability	Moral
	Enforcement
	Monitoring

A. Human factors

Human factors referred to the issues of the users themselves which include several groups of practitioners such as doctors, nurses, medical assistants, pharmacists, radiologists, scientists, dieticians, as well as the clerks who did the registration at the counter. Fourteen sub-issues that impede them from successfully implementing HIS were identified.

Amongst the most significant issues are related to mentality, awareness, preference, skill and commitment. The mentality of the users gives a very significant influence to the failure of IS implementation. The negative mind-set on HIS implementation were notified in most hospitals.

Some practitioners are reluctant to use the HIS because they are not ready to change from the existing system. Their knowledge about the HIS is very shallow due to insufficient awareness. To ensure awareness reach all level in organization is a big challenge in IS implementation, especially for a big hospital. However, it is a must in order to avoid misunderstanding about the concept and nature of the system. Due to lack of awareness, users tend to ignore the HIS because they don't see how it will help them to improve their work performance and provide better service to patients. They rather interpret it as a burden to them. Consequently, the system was adopted only by certain departments or wards.

In terms of preference, although computerized system has been introduced, there are some practitioners who still prefer to use the manual process instead of the new approach. This is due to many factors such as lack of knowledge and awareness about the system, mentality, priority of work and lack of enforcement. There are some practitioners who were not comfortable with the technology employed in the system. Although some medical practitioners prefer manual process rather than computerized system, TPC has its own supporters.

Due to frequent relocation of staff within healthcare agencies, lack of skills among the practitioners to operate the system are another issue arose by many respondents because the skillful staffs have been transferred to other healthcare agency. To gain commitment from the practitioners to participate in HIS implementation is a tough task. However, without their support and commitment, HIS implementation will not succeed. This issue occurs in most hospitals.

Moreover, lack of commitment is also related to self-interest and initiative issues. Sufficient initiative from the leaders or supervisors is important to develop self-interest among their subordinates and consequently helps to gain their commitment towards the success of the HIS implementation. The priority of work for the practitioners in hospital is more to patient care. Due to the situation, heavy workload was one of the factors that leads to the failure of HIS implementation because the priority is given to their core duty to treat the patients.

The attitude "let the juniors do" among the seniors also affects the success of HIS implementation because each level of staff has different task or role to be carried out. Each individual should do their parts according to the roles given. The importance of the positive attitude in IS implementation has been highlighted by Barki and the team [25]. User dependency is another issue which influenced the smooth implementation of the HIS in most hospitals. Dependency on a single 'champion' or certain users to implement the

system will put it in a risk if the champion or users move out from the organization. The continuity of the system will be a very challenging task.

Other issue arose by one of the respondent was the user's first impression of the HIS without getting to know the exact contents and applicability of the HIS. The respondent said that Tele-Primary Care system (TPC) has been developed by Tele-Health Division in MOH to be used in Health Clinics. Health Clinic is the primary care provider. So, the name of the system has created a negative impression towards the TPC acceptance in hospital because hospital is the secondary care provider. As human is the main character in IS implementation, all the issues discussed above have a significant impact on the failure of IS implementation.

B. Technology Factors

There are four sub-issues identified related to the technology and infrastructure available at the hospital; compatibility, readiness, availability, and network stability. All the issues are common in non-IT hospitals; HTF, HPP and Hkulim. Since HSB is an IT-hospital, not much issues encountered.

All the selected hospitals are having problems in terms of the availability of the hardware and infrastructure to operate the HIS. Besides insufficient hardware (e.g. computer, printer and other devices) supplied to implement the HIS, there are cases in which the available hardware couldn't be utilized for the HIS purposes due to compatibility issue. For example, the HIS has been used since early 2000s cannot be operated on the new computers which are on Windows 8 or Windows 10 platform. This issue is encountered in most of the hospitals. Furthermore, all HIS used in the hospitals either running on web platform or client-server based, its operation is highly dependent on the stability of the network in the hospital. The network stability issue is encountered in the three non-IT hospitals; HTF, HPP, and HKulim.

All the issues encountered above led to the readiness matter. Due to those issues, users are not ready to implement the HIS because they don't have enough suitable computers and other needed devices, as well as a stable network access. As discussed above, we can see that the technology and infrastructure issues give a significant impact to the failure of IS implementation.

C. Software limitation factors

There are thirteen sub-issues categorized under software limitations. Software limitations refers to the limitation of the HIS itself. Limitations of the software somehow affected users' adoption of the HIS. The most significant issues are the compatibility of the system software and system integration issue. These two issues are closely related to each other. In non-IT hospitals, instead of the main HIS, there are numerous systems used to support their daily tasks. However, all the systems are not integrated to each other. That is one of the factors contributed to the failure of the HIS implementation.

Some HIS software is not compatible to be integrated with other systems used in the hospitals because the data coding is not standardized. The most common field is Identity Card Number (IC No.). In one system, patient's IC No. is recorded as 860122-14-5564, while in other system it is recorded as 860122145564. With the bulk of data, integration between several systems is a very big challenge.

Due to the two issues discussed, practitioners felt reluctant to use the HIS since they can't see the impact and efficiency of the system because patient's data is unable to be shared between related systems. System ownership is another issue that should not be omitted because it led to data sharing issue. Clear understanding of who is the owner of the system is very important because some departments claimed that the system is theirs and they are not willing to share the data due to confidentiality of the data.

According to the respondent, the owner of all the data is the Ministry of Health and it could be shared with other departments under the ministry in order to offer a better service to the patients. Only the workflows applied in the system are in respect to the respective department. For example, Pharmacy Department hold the workflows related to the processes in Pharmacy, while Nursing Unit hold the workflows of the processes in wards. On the other hand, limitation of the HIS software functionality itself might hinder users to utilize the HIS. For example, non-editable for some important fields may lead to data reliability issue. Furthermore, the respondent suggested that the system need to be replicated because at the moment when the network is down, he has to revert to the manual process.

Sometimes, users felt that the HIS is too complex and it takes a long time to adapt, while some others said that some modules in the system is not suitable to be implemented in their hospital because the workflow in the system is incorrect. This suitability issue arose because the system has been developed based on requirements from other hospitals. Moreover, data redundancy also did occur. As a result, the HIS is not being fully utilized.

All software limitations issues discussed indirectly affected the HIS implementation and contribute to the its failure Compatibility of the system software and system integration issue found to be the most significant.

D. Support factors

There are six sub-issues identified under support issues category; financial support, moral support, technical support, peer influence, enforcement, and monitoring. HIS implementation need support from many parties and it can be seen as the main hurdle in implementing HIS. Financial support, enforcement and monitoring are the most common issues faced by all the hospitals.

In terms of financial, support from top management is very important to allocate some amount of budget for HIS implementation. This issue is faced by all the hospitals. Instead of the need of money for hardware acquisition, some money is needed to initiate programmes to promote and create awareness among the staffs. Hence, the commitment from the top management toward the success of HIS implementation is vital.

Enforcement is another most significant issue in HIS implementation. As identified in all hospitals, the lack of enforcement found to be one of the factors contributed to the failure of HIS implementation. There are several levels of enforcement involved; top management, middle manager and immediate supervisor. In order to ensure HIS implementation runs as planned, monitoring is an essential activity. Monitoring issue is encountered in all the selected hospitals. Lack of monitoring during HIS implementation has contributed to the failure of the implementation because the progress of the implementation is not monitored accordingly.

Technical support is a common issue in the non-IT hospitals. Insufficient number of IT staff is amongst the reason of the poor technical support of HIS.

Apart from that, lack of moral support was identified to influence the users to adopt HIS. Support from top management of course is the main motivation for them to continue the effort. However, support from the middle managers such as the head of department/unit and their immediate supervisor might boost their desire to get involve and support the implementation.

Influence from a friend also may give some impact to the success of HIS implementation. According to some respondents, the practitioners are not attracted to use the system because only a few of their friends are using it, while the others are not involved. This issue is also related to the enforcement from the leaders.

V. The Proposed Model

A prevention model is designed by incorporating CM to tackle the identified CFFs and CM elements from three CM models (Lewin's Model, Kotter's Model and Prosci's ADKAR Model). Since CM is incorporated, the model will only tackle two of the main factors that contributed to the failure of IS implementation which are human and support factors. There are fourteen sub-issues of human and six sub-issues of support mapped to thirteen elements of Change Management identified from the CM approaches of Lewin, Kotter and Prosci to prevent the failure of IS implementation.

Currently, IS implementation in government hospitals in Malaysian Northern Region is only focusing on training and adoption of IS among medical practitioners. The importance of the preparation before the real implementation and after the implementation process were not given appropriate attention. Therefore, this article proposes three sub-phases of IS implementation for better management of processes and activities involve in IS implementation. The three sub-phases are Pre-Implementation, During-Implementation and Post-Implementation [28] as illustrated in Figure 1.

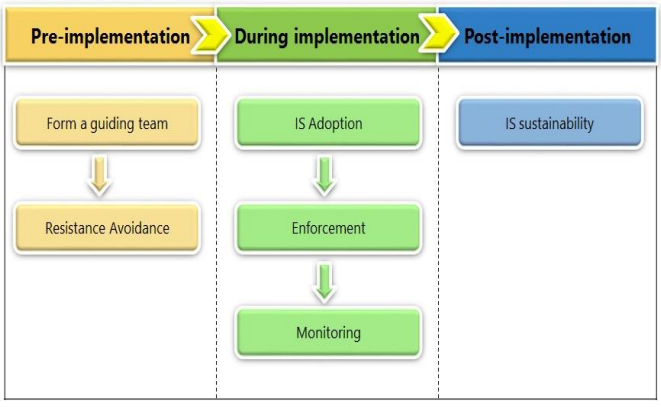

Figure 1: Phases of prevention model for IS projects implementation failure

Pre-Implementation is a phase to prepare the organization and the people before a new IS being implemented; to break them out from their comfort zone. The phase involves two processes; to form a guiding team, and resistance avoidance activities. *During-Implementation* is the phase in which the real implementation takes place. It involves three processes; IS adoption, enforcement, and monitoring. *Post-Implementation* is an important phase to sustain the utilization of the IS in the organization. This phase involves activities to encourage further involvement of individuals in IS implementation as well as activities that may continuously monitor and enforce the users to utilize the IS.

During pre-implementation, Lewin and Kotter emphasized on the importance of guiding team to drive a successful change. It is important to form a group of people with shared commitment and having enough power to lead the change effort. In IS implementation, the guiding team should not only consist of IT personals but also top management, system owner and other relevant individuals. Leadership skill among the group members is also important. Having sufficient power enables the group to make a decision that can facilitate the change. When a new IS to be implemented, the guiding team need to recognize the change; what will be changed and whom will be affected with the new approaches; any changes or adjustment need to be done to any work procedures or policies to fit the new approaches; and what is the impact of the new IS to the practitioners as well as the organization.

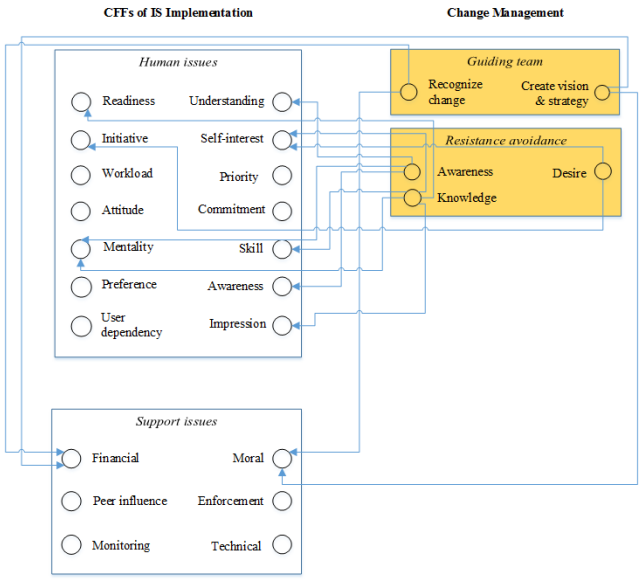

Figure 2: CM mapping during pre-implementation of HIS

The guiding team needs to create a clear vision which will help to drive the change effort as noted in Kotter's approach. The guiding team need to formulate strategies to achieve the vision. By recognizing the change and its impact to the organization together with the vision and strategies set, the guiding team are able to convince the top management to support the IS implementation. There are two important support needed from top management; financial and moral.

In IS project implementation, one of the important aspects is to prevent user resistance as early as possible. From Prosci's ADKAR model, three elements of individual Change Management have been adopted to prevent user resistance in IS implementation; awareness, desire and knowledge. Creating awareness is essential to prepare individuals for change. Guiding team need to communicate the vision set and the reasons why the IS is to be implemented, to develop their understanding of the need to utilized the IS. Moreover, the guiding team need to highlight how the IS will give a good impact to them; to change their

mentality that the implementation of the new IS is a burden and adding more workloads to them.

Furthermore, it is important to develop individuals' desire to support and participate in the IS implementation. Hence, helps to develop their self-interest and having the initiative to contribute to the success of the IS implementation. The knowledge element emphasizes by Prosci is vital to completely prepare practitioners to utilize the new IS. Hands-on training sessions are able to develop practitioners' skills to use the IS, thus makes them ready to utilize the IS. Their training experience with the IS may increase their self-interest and change their negative mentality as well as the bad impression of the IS implementation.

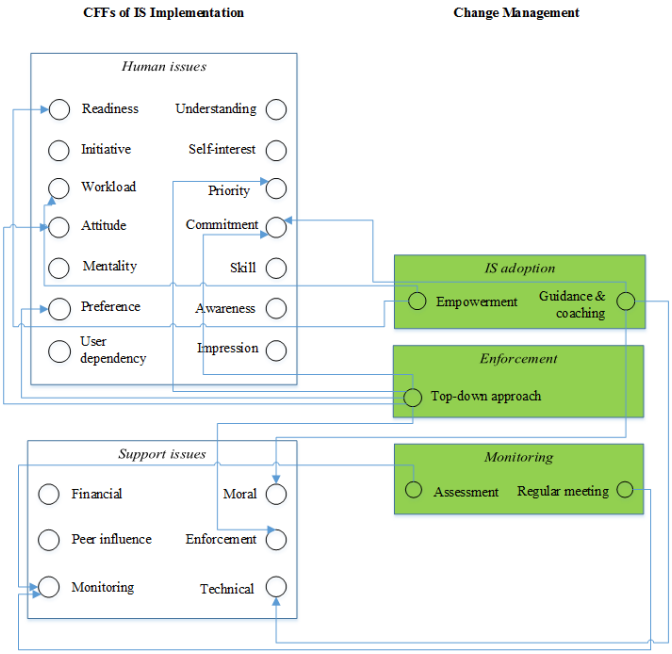

Figure 3: CM mapping during implementation of HIS

In order to adopt the new IS into practitioners' daily routine, top management need to empower relevant individuals to act on the vision as suggested by Kotter and Lewin. For example, to appoint a change agent for each department involved and empower them to act on the vision. As in the issue of workload, the change agent has the power to take actions to accommodate the IS implementation. Thus, helps to them to be ready for IS implementation.

During the implementation of a new IS, guidance and coaching from the guiding team not only helps them to adapt to the IS but also helps to gain practitioners' commitment to utilize the IS. Visible support especially from the top management by getting involved during the implementation provides a very good moral support to the practitioners. Since the guiding team also consists of IT personnel, it helps to tackle the issue of technical support.

The adoption process need to be followed with enforcement. In government hospitals, instruction from the top management is very powerful. Hence, the top-down management driven as promoted by Lewin is suitable to enforce the practitioners to use the IS. Although awareness, training and coaching has been carried out, some practitioners still prefer to use the manual system, while some others prioritize more on patient care. In this situation, enforcement from the top management is the best way to tackle the problem. The approach may help to gain practitioners commitment to use the IS and to change their negative attitudes on the adoption of the IS.

IS adoption process needs to be monitored to ensure the implementation works accordingly as planned. Monitoring can be done through assessment and regular meeting as proposed by Kotter and Prosci. Assessment of the progress of the IS implementation need to be conducted regularly to resolve issues arise as quickly as possible to avoid it to affect the smooth implementation of the IS. Apart from that, regular meeting may also serve the same purpose.

After a successful implementation of IS project, actions need to be taken to sustain the IS; to make the IS as a part of the culture in the organization. Recognition and reward should be practiced as an appreciation to those contributes to the success of the IS implementation and may influence others to participate and support the IS implementation. Besides offering moral support, the approach helps to motivate other practitioners to take appropriate initiatives and giving their commitment to ensure the success of the implementation.

To ensure the continuity of IS in organization, Kotter emphasized the importance of developing a succession plan to avoid the dependency on certain users. In IS implementation in hospital, dependency on certain users or champion is very risky due to frequent relocation of staffs within healthcare agencies.

In Kotter's CM approach, he noted on the need for continuous assessment to sustain the change. An assessment procedure need to be developed to identify what is working and the things that need to be improved. The assessment need to be conducted regularly to ensure that the change stick as the culture in the organization. Other than that, regular audit can be considered as a kind of enforcement and monitoring to ensure that the IS is continuously implemented by the practitioners.

VI. CONCLUSION

The prevention model for HIS projects implementation failure constructed through this study serves as a guideline to manage human-side of change when a new HIS is to be implemented. It also helps to prepare the organization for change. Thus, preventing the failure of IS projects implementation in Malaysian government hospitals.

The proposed model is believed to be beneficial in ensuring the success of IS implementation in government hospitals. If it is being use accordingly, it can help to prevent the failure of IS implementation. Hence, the addressed problems can be avoided and prevented. Preventing the failure will ensure the cost and effort given in worth spent.

Other benefits of the model can be seen in terms of the management of IS implementation. It can be used as a guideline for top management for monitoring purpose. IT practitioners in hospital can get benefit as well in terms of work efficiency. Successful implementation of IS will benefit medical practitioners who have been waiting for it since ages. For example, successful integration of systems will allow data sharing across department, even can be shared between hospitals. Successful IS implementation will enable medical practitioners to access patient's treatment records efficiently, thus enables hospital to provide better service to patients.

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